

Hair coloring device with detachably connected base part

The invention relates to an electrical device for applying a hair coloring additive to hair, which device comprises a container for hair coloring additive, said container having a first side and a second side, said first side being covered by a base part provided with hair contacting elements and additive outlets, an additive displacing member being provided in the vicinity of said second side, and electrical actuator means for forcing said additive displacing member towards the base part for expelling additive from said container through said additive outlets.

The invention also relates to a container for use in an electrical device for applying a hair coloring additive to hair comprising said container, said container having a first side and a second side, said first side being covered by a base part provided with hair contacting elements and additive outlets, an additive displacing member being provided in the vicinity of said second side, and said device further comprising electrical actuator means for forcing said additive displacing member towards the base part for expelling additive from said container through said additive outlets.

A device of the type defined in the opening paragraph is known from WO 98/51183. In the known device, the hair contacting elements comprise hollow tines which project from the base part and are provided with outlet openings. Said base part and tines are an integral part of the container. During operation the additive displacing member, formed by a plate, is forced by electrical actuator means towards the base part, as a result of which the hair coloring additive is transported from the container via the outlet openings in the tines to the hair.

A drawback of the known device is that it is cumbersome for a user to clean the device after use. Additive remaining in the device after operation cannot be removed in a convenient way, which creates the risk of additive clogging the outlet openings when it dries up. This may disturb a proper operation of the device during the next use.

It is an object of the invention to provide a device of the type defined in the opening paragraph that is easy to clean and more user-friendly. To achieve this object, a device for applying a hair coloring additive to hair according to the invention is characterized in that the base part is in its entirety detachably connected to the device. Since the base part can be detached in its entirety from the device, as if it were a lid, the inside of the container is uncovered, which makes it easily accessible for cleaning. The base part itself can also be easily cleaned as a separate element, to remove additive residues from the hair contacting elements and the outlet openings.

An embodiment of a device according to the invention is characterized in that the base part is in its entirety detachably connected to the container. The base part can be detached in its entirety from the container, as if it were a lid, thus uncovering substantially the whole interior of the container and making it easily accessible for cleaning. Again the base part itself can also be easily cleaned as a separate element.

An embodiment of a device according to the invention is characterized in that the device comprises at least one further base part which comprises further hair contacting elements and is in its entirety detachably connected to the device. This further base part comprises further hair contacting elements that are different from the first hair contacting elements of the first lid. The base part is interchangeable with the other base part. The user can thus choose a base part to be connected to the device which has the type of hair contacting elements that are optimal for coloring the hair in the desired manner, for example only the roots, a tress of hair, or the whole head of hair.

It is advantageous when the hair contacting elements comprise hollow pins provided with additive outlets. The base part provided with these pins allows a comfortable and easy manner of applying the hair coloring additive to the whole head of hair.

It is furthermore advantageous when the further hair contacting elements comprise brush hairs. The further base part provided with these brush hairs allows for an easy touching-up of parts of the hair and for an easy coloring of the roots of the hair.

An embodiment of a device according to the invention is characterized in that a surface of at least one of the base parts, on which the hair contacting elements or the further hair contacting elements are provided, comprises a depression. When the device is placed on, for example, a table after or during use, with the hair contacting elements and outlet openings facing away from the surface of said table, said depression in the base part will collect any residual hair coloring additive that might leak from the hair contacting elements and outlet openings that have just been used. In this manner it is prevented that the device or the table or

any other surface will be soiled by hair coloring additive when the device is not in use and has not yet been cleaned. Furthermore, the residual additive can be easily wiped away by the user.

It is advantageous when said depression is provided in the vicinity of the hair contacting elements or the further hair contacting elements. In this manner the residual additive is collected at a location which is close to the hair contacting elements, by means of which it is avoided that the additive spreads over the base part and the device.

According to the invention, a container for use in an electrical device for applying a hair coloring additive to hair as mentioned in the opening paragraph is characterized in that the base part forms a part of the container and is in its entirety detachably connected to the container. Such a container may be an integral part of a device for the coloring of hair, or alternatively a container which itself is detachably connected to such a device.

It is advantageous when the device comprises at least one further base part, which comprises further hair contacting elements and which forms a further part of the container and is in its entirety detachably connected to the container.

It is furthermore advantageous when, in such a container, a surface of at least one of the base parts, on which the hair contacting elements or the further hair contacting elements are provided, comprises a depression.

It is observed that US 5,937,866 discloses a device for the coloring of hair comprising a container and various hair contacting elements which are detachably connected to the container. This device is of a different type than the device according to the invention, because in this device the transport of additive is manually activated. It is not an electrical device for applying a hair coloring additive to hair, comprising an additive displacing member which can be operated by electrical actuator means for expelling additive from said container through additive outlets.

The invention will be described in more detail below with reference to the drawings, in which

Fig. 1 is a schematic side elevation of a first embodiment of an electrical device for applying a hair coloring additive to hair according to the invention,

Fig. 2 is a perspective view of a second embodiment of an electrical device for applying a hair coloring additive to hair according to the invention, and

Figs. 3a, 3b and 3c show details of a third embodiment of an electrical device for applying a hair coloring additive to hair according to the invention.

Fig. 1 shows a first embodiment of an electrical device 2 for applying a hair coloring additive to hair, which device comprises a container 3 for hair coloring additive. Said container 3 has a first side 4 and a second side 5. Said first side 4 is covered by a base part 6 provided with hair contacting elements 7, which in this embodiment comprise hollow pins provided with additive outlets 8', and an additive displacing member 9 is provided in the vicinity of said second side 5. In this embodiment, said additive displacing member 9 comprises a plate, but it may alternatively comprise any other type of displacing member. During operation, the displacing member 9 is forced by electrical actuator means 10 towards the base part 6 for expelling additive from said container 3 through said additive outlets 8. In this embodiment the electrical actuator means comprise batteries 104, a motor 103, a gear train 102, a pinion 106 with a cam profile, and a piston 101. During operation, the device 2 is activated by pushing an on/off button 105. When this button 105 is pressed, the motor 103 drives the gear train 102, which contacts the pinion 106 with the cam profile. The pinion 106 then pushes the piston 101 against the displacing member 9 towards the base part 6, by means of which additive is transported from the container 3 via the additive outlets 8 to the hair. It is noted that the electrical actuator means may alternatively comprise additional components, or different components such, as for example, a power plug instead of batteries.

The base part 6 is in its entirety detachably connected to the device 2, with the result that the device and the base part itself can be easily cleaned after use. In this embodiment, the base part 6 is in its entirety detachably connected to the container 3. This renders the interior of the container 3 easily accessible for removing any residual additive from the container 3. The base part can be separately cleaned, allowing easy access to the hair contacting elements and the additive outlets for removing any further additive residues. Clogging of the additive outlets is prevented thereby, and a proper operation of the device is ensured. The detachable connection may comprise any known type of detachable connection, such as for example a snap or a screw connection.

Furthermore, the container 3 in this embodiment is also detachably connected to the device 2. To ensure a proper sealing and locking of the container in the device, a locking ring 19 is provided at the location where the container is connected to the device.

As can be seen in Fig. 2, a second embodiment of the device comprises at least a further base part 61 which comprises further hair contacting elements 71, here formed by brush hairs 71', and which is in its entirety detachably connected to the device 2. This further base part 61 is thus interchangeable with the other base part 6, so that the user can choose from these base parts a base part to be connected to the device which has the type of hair contacting elements that are optimal for coloring the hair in the desired manner. The brush hairs are, for example, especially suitable for coloring of the roots of the hair, and the pins are especially suitable for overall coloring of the hair.

Figs. 3a, 3b and 3c show a third embodiment of a device for applying a hair coloring additive to hair according to the invention. In this embodiment, a surface 11 of the base part 6, on which hollow pins are provided, and a surface 11' of the base part 61, on which brush hairs 71' are provided, each comprise a depression 12, 12'. When the device 2 is put down during or after use, additive residues may leak from the hair contacting elements and outlet openings that have just been used. This additive is prevented from leaking onto the housing of the device or the surface the device rests on, because the depression 12 collects any of this residual hair coloring additive. Figs. 3b and 3c show in more detail the base parts 61 and 6, detachably connected to the container 3 via a screw connection and each provided with the respective depression 12, 12'. As can be seen in the Figures, said depression 12, 12' is provided in the vicinity of the pins 7' or the brush hairs 71'. Thus the residual additive is advantageously collected at a location which is close to the hair contacting elements.

As can be seen in Figs. 3b and 3c, the base parts 61 and 6 are both provided with a screw thread at their outer circumferential surfaces. The container comprises a screw thread, which fits the screw thread of the base part, substantially at its outer circumferential surface. Furthermore, the diameters of both the container and the base parts are substantially equal. Substantially the whole interior of the container can thus be exposed for cleaning purposes when the base part is detached from the container.

In the embodiments described above, the container itself is also detachably connected to the device. The invention, however, also comprises devices in which the container is not detachable from the device and forms an integral part of the device.

It is noted that the device may comprise various other base parts, which may each in their entirety be detachably connected to the device, and may comprise various types of hair contacting elements. In this manner the user can make a choice for one of the interchangeable base parts, dependent on the type of hair contacting elements that are optimal

for coloring the hair in the desired manner, for example only the roots, a tress of hair, or the whole head of hair.

Although the following does not form part of the invention in accordance with the claims of this application, it is furthermore noted, for the sake of disclosure, that a depression, provided in a surface of a base part on which surface hair contacting elements are provided, is also advantageous in a device for applying a hair coloring additive to hair in which the base part is not in its entirety detachably connected to the device and, for example, forms an integral part of the device. The advantage of collecting leaking additive residues by means of the depression also applies to a device in which the base part is not in its entirety detachably connected to the device such as, for example, the electrical device described in WO 98/51183. It is, however, also advantageously applicable in a manually activated device for applying a hair coloring additive to hair.